

20 May, 2010
The Institute of Physics, London, UK

Jörg Kienitz presents

Advanced Financial Mathematical Methods – Using Stochastic Volatility and Lévy Processes based models in Finance – Hands On Workshop

The goal of this one day seminar is to provide a detailed overview, offering insights into the latest techniques of modelling uncertainty in financial markets and demonstrating computational methods to tackle the models. We show Monte Carlo simulation as well as semi-analytical methods based on Fourier transforms. The latter techniques are suitable for efficient calibration of the underlying models.

We explain how to set up the methods in matlab. We provide market data for calibrating the model and the whole work-cycle for successfully handling derivatives within the above framework including market data, calibration, simulation, pricing, hedging and risk management.

A practical and intensive course covering the implementation of advanced financial models covering Fourier methods and Monte Carlo methods.

About the speaker

Jörg Kienitz is the head of Quantitative Analysis at Deutsche Postbank AG. He is primarily involved in the developing and implementation of models for pricing of complex derivatives structures and for asset allocation. He also lectures at university level at the Universities of Oxford, Bonn and Duisburg on advanced financial modelling and gives courses on 'Applications of Monte Carlo Methods in Finance' and on other financial topics including Lévy processes and interest rate models as well as lecturing on finance conferences like RISK Europe. Jörg holds a Ph.D. in stochastic analysis and probability theory. Jörg authored several papers on mathematical and computational finance. He also is the co - author of the book "Monte Carlo Object Oriented Frameworks in C++" (together with Daniel J. Duffy) which will be published by Wiley in September 2009.

Course Highlights

This seminar discusses the most important issues that need to be addressed when we implement advanced financial models and price options using Monte Carlo and Fourier transform methods:

- Numerical Schemes for Jump-Diffusion Models
- Monte Carlo Simulation Methods for the Variance Gamma and Normal Inverse Gaussian
- Calibration on market data for DAX data
- Fourier Transform Methods for Carr-Madan and Cosine method
- Stochastic Volatility Lévy models
- Bermudan Options and Fourier Transform
- Bridge sampling

Course Methodology

- Short Introduction (Presentation)
- Hands-On exercises (matlab) and discussion

Prerequisites

To participate in this course, you need to bring your own laptop with matlab installed.

Who should attend?

- Financial Engineers
- Risk managers
- IT staff supporting the structured products group
- Credit Risk Management
- Model Validation Quants
- Quantitative Analysts and Researchers
- Quantitative Model Developers

Course Contents

Part I:

Fourier Transform Based methods in Matlab

- Carr-Madan method
- Cosine method
- Financial Models

Calibration

- Local and Global Optimizer
- Calibration to DAX market data

Part II:

Monte Carlo Simulation

- Geometric Brownian motion
- Merton jump diffusion model
- Variance Gamma model
- Normal Inverse Gaussian model
- Distributional and path properties

Exotic Options and Bridge Sampling

- Monte Carlo Methods for Exotic Options
- Brownian Bridges
- Gamma Bridges

To participate in this course, you need to bring your own laptop with Matlab installed.

Further Information

Dates: 1 Day – 19 May, 2010

Venue: The Institute of Physics, London, UK

Cost: £1100 exc. VAT (1 day only)
£1980 exc. VAT (1 day + hands on workshop)

Enquiries

Jacob Bettany

Tel: +44 (0) 117 923 8851

Email: jacob@moneyscience.com

Part III:

Numerical Schemes for Stochastic Volatility Models based on Lévy Models

- Stochastic clocks and volatility
- The CIR Clock
- The Gamma Ornstein-Uhlenbeck (GOU) Clock
- The Variance Gamma CIR / GOU models
- The NIG CIR / GOU models
- Comparison to Heston and Bates stochastic volatility model

Pricing Exotic Options

- Monte Carlo methods for option pricing
- Setting up Monte Carlo simulation
- Schemes for VG model
- Schemes for NIG model
- Schemes for GOU clock
- Schemes for CIR clock
- Computing the Greeks

Part IV:

General Principles of Software Design

- Choosing a language (VBA, Matlab, C++, C#)
- Designing algorithms
- Designing Applications and reusable code

Registration

Please Return Application form to:

Financial Training
MoneyScience Ltd,
4 St Pauls Road,
Bristol,
BS8 1LT,
UK



Registration Form

Advanced Financial Mathematical Methods – Day 2 (Hands on)

Title (Mr/Mrs/Ms/Dr/Other)

First Name

Last Name

Email Address

Participant's First Name (If different from above)

Participant's Last Name (If different from above)

Participant's Email Address (If different from above)

Company Name

Job Title

Department

Telephone Number

Tax Registration No.

VAT Registration No.

Address for Invoice

Postal Code

Country

Please Return Completed Application to:

SIGNED.....

Financial Training, MoneyScience, 4 St Pauls Road, Bristol, BS8 1LT, UK

DATE.....

or Sign, Scan and Return to jacob@moneyscience.com

I have read and understand the Terms and Conditions on the page following.

Cancellation

If a person who has registered for this course is unable to attend for whatever reasons, a substitute delegate may be appointed to participate in advance. Cancellation will be accepted only in written form no later than twenty calendar days prior to the date of the course while a cancellation fee in the amount of 10% of the price or block price will be charged. Cancellation of the participation within a period of less than twenty calendar days prior to the date of the course is not possible for the technical and the organisational reasons. MoneyScience reserve the right at all times to cancel participation or cancel the entire seminar for whatever unspecified reasons, including possible force majeure. In this case, the price will be refunded in full to the applying participant.

Terms and Conditions

MoneyScience Training Events are English-language seminars, training sessions and practical workshops delivered by expert, qualified tutors. Our objective is to provide industry professionals with advanced financial know-how and up-to-date analytical methods and skills.

Tuition Language

MoneyScience Events are held in English and all relevant manuals, training software etc. are also provided in English. In order to benefit from participation, a good working knowledge of English, including common financial phrases and related terminology, is required.

Registration

Clients who decided to participate, should submit their registration by mail to us in advance. Subject to availability, the participant will then receive a confirmation of participation. The number of participants is strictly limited to preserve an effective and focused learning environment.

Seminar Prices

The quoted seminar prices are per person and include all course material, lunches and refreshments. The price does **not** include hotel accommodation. Quoted prices are exclusive of VAT.

Discounts

Bulk discounts are offered when submitting an application for the participation of more than one person. Please contact jacob@moneyscience.com for further details.

Invoicing and Payment

An invoice for the seminar price will be sent to the participants on receipt of their Registration Form and should be paid within days. Full payment of the invoice must be made before the start of the course as a precondition of participation.

Terms of Cancellation

If a person who has registered for this course is unable to attend for whatever reasons, a substitute delegate may be appointed to participate in advance. Cancellation will be accepted only in written form no later than twenty calendar days prior to the date of the course while a cancellation fee in the amount of 10% of the price or block price will be charged. Cancellation of the participation within a period of less than twenty calendar days prior to the date of the course is not possible for the technical and the organisational reasons. MoneyScience reserve the right at all times to cancel participation or cancel the entire seminar for whatever unspecified reasons, including possible force majeure. In this case, the price will be refunded in full to the applying participant.